Purifying the Leviathan: The Political Economy of China's Anti-corruption Campaign and Evolving Governance Models

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Abstract

Why do authoritarian leaders implement anti-corruption campaigns that expose the fundamental vulnerability of the regime? This paper illustrates a strategic dilemma of authoritarian regimes in coping with corruption through the lens of the recent anti-corruption campaign in China. We argue that condoning corruption serves an incentive role for rent production; however, it erodes the ruling party's ideological base and inevitably incurs public discontent. An analytical framework helps clarify the relationship among bureaucratic capability, loyalty, and corruption, and suggests that authoritarian leaders may switch from a permissive to a punitive scheme for corruption when the institutional loophole is large and economic growth exhibits a diminishing impact on the regime's popularity. Empirical evidences on evolving patterns of political selection, the correlation between city leaders' capability and anti-corruption probes, and a machine learning-based analysis on the annual work reports of city governments support the argument.

1 Introduction

The literature in comparative politics widely identifies regime type as a fundamental determinant of corruption. Authoritarian regimes are found to be associated with higher levels of corruption compared with democratic ones (Lederman, Loayza and Soares, 2005; Méndez and Sepúlveda, 2006; Rose-Ackerman, 1997; Treisman, 2000). Yet, within the authoritarian category, there remains considerable variation in the regime's toleration of corruption. While some regimes afford systemic corruption (Abueva, 1966; Hagopian, Gervasoni and Moraes, 2009), many others declare that corruption is an imminent threat to the regime and impose strong sanctions against it (Gillespie and Okruhlik, 1991; Carothers, 2020; Rand and Tarp, 2012). This discrepancy gives rise to the puzzle of understanding authoritarian governance. Why would it be in the interest of authoritarian rulers to implement anti-corruption campaigns that reveal the regimes' vulnerability? Do the campaigns entail sincere efforts to tackle challenges to their political governance?

This paper aims to examine these questions through a single case study, the massive anti-corruption campaign of the Communist Party of China (CPC) launched under the leadership of Xi Jinping and the evolving governance model in China since the 1990s. The purpose of this study is not only to explain the CPC leadership's strategic motivation in launching this campaign, but more importantly, to place China in the broad context of authoritarian regimes and examine the political logic of its governing mechanism. To fulfill this purpose, it is not sufficient to focus on the anti-corruption strategies *per se*. A satisfactory account of the anti-corruption campaigns needs to theorize the circumstances under which rulers' are willing to accommodate corruption in the first place. To this end, China is chosen as a case in point, as the prevalence of corruption and the state's capability to manage the economy have been defining features of its governance. As the second largest economy in the world, China's governance model has far-reaching impacts beyond the country and has posed an intellectual challenge to the Western world for understanding how authoritarian regimes really work.

We propose a conceptual framework, along with a heuristic model, to illustrate the interplay among corruption, development, and political selection in a principal-agent relationship. The argument highlights the trade-off between boosting rent production and maintaining public support for the regime in coping with corruption. Following the generic models on authoritarian rule, as in Svolik (2012), we argue that the stability of authoritarian rule depends on the effectiveness of the regime to maintain popular support and form a loyal political coalition. Economic rents enhance the regime's capacity of maintaining popular support temporarily. However, as it is difficult to price and contract the agents' contribution to rent production *ex ante*, the regime is often induced to adopt an outcome-based performance evaluation scheme and condone the agents' systemic rent-seeking. We define this as the permissive model of authoritarian governance.

Meanwhile, the permissive model poses two threats to authoritarian regimes. The first stems from public discontent. Authoritarian regimes' capacity to address social grievances and injustice arising from government wrongdoing is limited by an inherent agency problem in bureaucratic systems (Chen, Pan and Xu, 2016; Hollyer, Rosendorff and Vreeland, 2015). As a result, corruption and social protest often go hand in hand in fast-growing economies (Ang, 2020; Lorentzen, 2013). The second threat is the impacts of declining loyalty of officials under the permissive model. Through boosting economic performance, officials capitalize substantial power for personal enrichment. They may obtain a sense of ownership of the regime in this process and deviate from the ideal policy and ideological course as preferred by the central leadership.

In turn, when the threats dominate the benefits from rent production, rulers may switch to a centralized model of governance and impose more stringent anti-corruption sanctions. We define this alternative as the punitive model. This model has two key components. The first component is a campaign to propagate ideological allegiance. The second is the replacement of rent production with more inclusive policy agendas, such as maintaining the integrity of the government and taking care of the disadvantaged groups. To signal resoluteness in advancing these goals, anti-corruption strategies may

be deployed to remove obstacles along the way moving toward the new punitive model of governance.

Our theoretical argument analyzes the circumstances under which rulers may switch from the permissive to the punitive model. The formal model (relegated to the appendix) establishes the comparative statics for examining evolving models of governance in the regimes that have undertaken massive anti-corruption campaigns. Those results guide us to analyze the empirical regularities of political selection and the anti-corruption campaign. We obtain three main findings that are consistent with the argument:

1. City leaders' contributions to economic performance were positively associated with the probability of political promotion before the anti-corruption campaign but not after it. Moreover, city leaders' personal connection to their superiors, a proxy for political loyalty, exhibits a larger effect on promotion after the campaign.

2. Consistent with the logic of the permissive model, city leaders' contributions to economic growth were positively correlated, and their connections to superiors were negatively correlated with the probability of being prosecuted for corruption in the campaign.

3. Consistent with the logic of the punitive model, city leaders who were promoted during the anti-corruption campaign exhibit higher allegiance to the party line, as measured by the textual analysis based on the annual work reports of prefecture governments.

2 Relation to the Literature

Our paper is closely related to a sizable literature on the political logic of corruption. Instead of considering corruption as only an unwelcome symptom of misgovernance, several theoretical works suggest that corruption can be a built-in piece for securing a winning coalition through rent-sharing (Bueno De Mesquita et al., 2005; Hollyer and Wantchekon, 2015; Klašnja, Little and Tucker, 2018). When formal political institutions

are inadequate to meet all the demand for public goods, corruption provides an informal arrangement of policy concessions that are necessary for regime stability (Fjelde and Hegre, 2014; Gerschewski, 2013).

Empirical research has demonstrated that corruption is integrated with rulers' strategy of mobilizing resources and garnering political support in various contexts, such as office selling (Guardado, 2018), electoral turnout manipulation (Frye, Reuter and Szakonyi, 2019; Larreguy, Marshall and Querubin, 2016), and clientelistic networks (Manzetti and Wilson, 2007). Our findings echo those researches in identifying the role of corruption as a rent-sharing mechanism that increases the political viability of the ruling regime. However, an important feature of the governance mechanisms in countries like China and other East Asian countries is that the bureaucratic corruption often coincides with rent production. Through decentralizing fiscal and administrative powers to local leaders, the permissive model warrants incentives for implementing growth-enhancing policies and boosting economic performance. In those contexts, the role of the state needs not be predatory, but is conducive to an expansion of "crony capitalism" (Bai, Hsieh and Song, 2014; Kang, 2002). Our findings on the correlation between officials' capability and the probability of investigation reconcile different perspectives on how corruption interplays with growth through affecting political accountability and political selection (Gans-Morse et al., 2021; Klašnja, 2015; Yang, 2021).

Our paper also relates to the literature on political patronage. Previous research has mainly focused on the patron-client relationship in electoral contexts (Brierley, 2021; Hassan, 2017; Kerevel, 2015; Kramon, 2016; Reuter et al., 2016). An emerging strand of the literature focuses on the interactions between patronage networks and bureaucratic performance (Colonnelli, Prem and Teso, 2020; Hollibaugh, 2018; Jiang, 2018; Lei and Zhou, 2020). Our research expands the focus from political promotion to bureaucratic sanction and illustrates how the ruler's strategies concerning loyalty and performance are interwoven in the choice of governance model.

Finally, this research is related to the literature on institutional changes in autocratic

regimes. A growing body of research has shown that radical political movements, such as mass repression or state-led political violence, have long-term impacts on people's trust in the regimes (Desposato, Wang and Wu, 2020; Rozenas and Zhukov, 2019; Wang, 2019). A handful of theoretical works aim to provide a rational foundation for understanding the non-institutional mechanisms of autocratic governance, such as purges or repression (Dragu and Przeworski, 2019; Montagnes and Wolton, 2019). Our paper explains why and when politically costly campaigns may enhance regime stability.

3 Permissive Model of Authoritarian Governance

The literature on comparative authoritarianism has reached a consensus that political institutions – from state legislatures to merit-based bureaucracy – help the ruling regime coopt the political supports of the elites and establish a coherent coalition (Arriola, 2009; Gandhi and Lust-Okar, 2009; Magaloni, 2008). The cooptation of capable agents in the ruling coalition serves the strategic purpose of defusing the danger of mass rebellion and grants a common interest for the coalition to preserve the political status quo (Boix and Svolik, 2013; Gandhi and Przeworski, 2007).

The rulers face the challenge of how to deter the risk of elite defection and maintain the internal cohesiveness of the coalition (Reuter and Gandhi, 2010; Roessler, 2011). Intra-party factional conflicts pose a tangible threat to political stability even under one-party systems (Budge, Ezrow and McDonald, 2010; Ceron, 2016; Nathan, 2017; Nyomarkay, 1967). Unconstitutional exits of rulers result more often from a coup d'état than from mass rebellions (Casper and Tyson, 2014; Svolik, 2012). In turn, rent-sharing through patronage networks may provide useful collateral for maintaining a cohesive ruling coalition and secure mutual trust between the ruler and subordinate agents (Golden and Chang, 2001). Our model of authoritarian governance echoes Bueno De Mesquita et al. (2005), who theorize that the ruler's incentives for rent distribution and public goods provision are shaped by the size of the ruling coalition. When the size of the coalition that is necessary for maintaining political survival is small, the ruler optimally resorts to

private spoils to buy the support of the elites. Consequently, systemic corruption may arise in equilibrium as a coalition building maneuver to boost the internal stability of the regime.

The ability of the ruler to sustain the ruling coalition is limited by the amount of rents. The Soviet Union and the other former Communist regimes adopted a planned economic system, which generated insufficient rents for sustaining elite support (Sachs and Woo, 1994; Shleifer and Vishny, 1992). Relying on natural resource extraction to provide rents exposes political stability to global resource price shocks (Nordvik, 2019). In contrast, the CPC's regime has accommodated a decentralized administrative system and employed high-power incentives to encourage regional competition (Xu, 2011). This model combines corruption with an overwhelming emphasis on the growth mandate. The incentive role of corruption under the permissive model sheds light on the cross-national finding that corruption does not have negative impacts on growth in countries with low-quality institutions (Aidt, Dutta and Sena, 2008).

4 Prevalence of Corruption

We argue that the CPC leadership under the party's general secretary Jiang Zemin in 1990-2002 spells out a permissive model of governance. After the delivery of Deng Xiaoping's famous pro-reform speech during his Southern Tour in the spring of 1992, Jiang's leadership enthusiastically adopted policies of market liberalization. The administration implemented several policy changes, including mass privatization and deregulation. The official ideological exhortation during the Jiang era was the "Three Represents," which depicted the leading role of the CPC as representing the advanced social productive forces, the progressive course of China's advanced culture, and the fundamental interests of the majority (Tsai, 2006). Corruption surged on all fronts – from the development of industrial parks to infrastructure projects (Bai, Hsieh and Song, 2014). Some high-profile cases, such as the smuggling case in Xiamen, featured collusion between officials and local businesspersons (Shieh, 2005).

The policy priority under the leadership of Hu Jintao, Jiang's immediate successor, did not shy away from the economy. In Hu's first term, from 2003 to 2007, annual gross domestic product (GDP) growth was maintained at more than 12 percentage points. Hu nevertheless attempted to address social grievances. The central government repealed agricultural taxes and made a large investment in social safety networks in rural regions. However, Hu's administration did not take enough measures against corruption. Several politburo members in Hu's second term were involved in scandals and prosecuted. In addition, Hu's second term as the CPC's general secretary was impaired by power fragmentation and factional conflicts within the CPC leadership (Chen and Hong, 2019; Shih and Lee, 2018). Ideological congruence was compromised as a result of internal division. Consistent with the logic of permissive model, the literature documents a robust pattern of performance-based promotion for subnational leaders in China (Bo, 1996; Li and Zhou, 2005; Yao and Zhang, 2015).

5 Price of Corruption

The permissive model introduces two kinds of threats. The first is due to the model's undermining of popular support for the regime. Social grievances, including human rights violations, workplace disasters, environmental degradation, and public health crises, serve as a public signal for citizens to coordinate on collective actions against the regime (Hollyer, Rosendorff and Vreeland, 2015; Huang, Boranbay-Akan and Huang, 2019). The pursuit of personal enrichment through corruption by political elites aggravate societal conflicts. The central government only intervenes in extreme circumstances due to significant administrative cost (Cai, 2008; Lorentzen, 2013).

The permissive model also undermines the internal cohesion of the ruling coalition through amplifying political opportunism (Xi, Yao and Zhang, 2018). Political loyalty is compromised when economic growth occupies a central position in policy agenda. Motivated solely by the growth mandate, local leaders allocate most of their efforts to economic affairs rather than the welfare of the poor and political loyalty. And for political

selection, the growth mandate tends to favor officials who have a successful record of economic performance. When the internal cohesion of the ruling coalition is in jeopardy, the ruler has to switch to a punitive model that places the strengthening of the party line ahead of growth.

6 Switch to a Punitive Model

We argue that the governing mechanisms of the CPC under Xi Jinping's leadership are characterized by a punitive model. In contrast to his predecessors, Xi initiated major policy changes after ascending to power in 2013. At the 2014 summit of the Asia-Pacific Economic Cooperation in Beijing, Xi proposed the term "New Normal" to downplay the growth mandate. New policy paradigms under Xi's leadership attached more importance to environmental protection, poverty reduction, and redistribution (Kostka and Zhang, 2018; Noesselt, 2017).

In 2013, the anti-corruption campaign was carried out with the mandate of cleanup and the CPC's "original aspiration" to serve the people. This move accords with a switch to a governance model based on political loyalty, which may stem from an increasing concern about severe institutional decay and Xi's personal ambition to restore political legitimacy as one of the Party's Crown Princes (Zhao, 2016).[1] In 2016, Xi raised "four types of consciousness" as key evaluation criteria for all cadres. This term includes the consciousness "of the need to maintain political integrity, think in big-picture terms, support the leadership core, and keep in alignment with the center."[2] The focus on the party line in political selection departs from the practice in the Jiang and Hu eras, when the recruitment strategy was intended to embody the "advanced social productive forces" (Dickson, 2003). This move is consistent with a transition from a permissive to a punitive scheme, triggered by rising popular discontent and the ruler's concern about institutional decay.

[1] Crown Princes refer to the descendants of the revolutionary Communist leaders.
[2] *Code of Conduct for Intraparty Political Life under New Circumstances*.

The anti-corruption campaign had unprecedented impacts on bureaucratic turnovers. As of August 2017, the campaign had investigated 224 province-level officials, more than 8,600 prefecture-level officials, and more than 66,000 county-level officials.[3] The pattern of investigations reflects the discrepancy between the permissive and punitive models. Under the permissive model, public investment projects became a hotbed for corruption. The testimonies released by the anti-corruption investigators suggest that the probed officials had a sense of entitlement to political rents. For example, a former deputy director of the Reform and Development Commission in Guangxi province, who was investigated and prosecuted for corruption in 2013, asserted the following,

I do not think that I am worthless, especially in economic development. I will not despise my own morality. It is no exaggeration that almost every item of expressway, coastal port, river port, airport, subway and countless projects came from me.... You can criticize my life and my morality, but my hard work cannot be obliterated.[4]

The existing literature provides inconclusive assessments about the anti-corruption campaign. Some papers report that the campaign negatively impacted economic growth through deterring bureaucratic incentives (Qu, Sylwester and Wang, 2018; Wang, 2020). Chen and Kung (2019) find that the campaign was associated with a significant drop in the cost premium enjoyed by politically connected firms in land acquisition. On the political importance of the campaign, some studies argue that it was intended as a power consolidation strategy by the dominant faction in the CPC (Zhu and Zhang, 2017; Yuen, 2014). This view is countered by several studies that suggest there was a sincere cleanup motivation behind the campaign (Lu and Lorentzen, 2016; Manion, 2016). The empirical analyses do not provide a micro-foundation for the ruler's strategic calculation leading up to the campaign or its broad implications for authoritarian governance.

[3] Editorial in the *People's Daily*, September 18, 2017.
`http://paper.people.com.cn/rmrb/html/2017-09/18/nw.D110000renmrb_20170918_2-01.htm`

[4] *Chinese Bulletin of Discipline and Inspection*, February 16, 2015.

7 Testable Hypotheses

In the appendix of this paper, we propose a heuristic model to illustrate the ruler's choice between the permissive and punitive schemes. We define a permissive scheme as one in which the ruler adopts a lenient approach toward corruption, and primarily focuses on the officials' performance and loyalty in bureaucratic selection. Alternatively, a punitive scheme is one in which severe sanctions are imposed, and agents who are involved in corruption are expected to be caught with a high probability and pay a high cost for such deals. Our model theorizes that, under the permissive scheme, an official's personal rent obtained through corruption is proportional to economic growth, which is further positively correlated with the official's capability in managing economic affairs. In turn, more capable officials have stronger incentives to exert greater personal effort to facilitate economic activities in their local jurisdictions.

Meanwhile, our model predicts that loyalty carries an increasing weight under the punitive scheme. This is due to an decreasing weight assigned to performance evaluation under the punitive scheme. Following the comparative statics established by Claim 1 in the model, less capable officials are predicted to assign less personal effort on growth facilitation and more effort to serve the party line. They tend to enjoy a higher probability of promotion in the anti-corruption campaign in a world when economic performance exhibits a diminishing impact on the career mobility of officials. While political loyalty is not readily observable, we follow the conventional wisdom in the literature to use personal connection with political superiors as a proxy of loyalty (Jia, Kudamatsu and Seim, 2015; Jiang, 2018; Wang et al., 2020). City officials normally do not have direct personal connection with the central leadership of the CPC. However, through connecting to provincial leaders, city officials could have better opportunities of establishing their reputation as loyal cadres through personal interaction with their political superiors. This reasoning leads us to the following predictions.

Hypothesis 1a. *More capable city leaders are more likely to be promoted before the*

anti-corruption campaign, and not so in the campaign.

Hypothesis 1b. *Personal connection is more strongly associated with the probability of promotion in the anti-corruption campaign.*

Our model sheds light on the quintessential commitment problem of authoritarian regimes in keeping rent-sharing promises with agents and sustaining their political support. Our theory implies that a transformation of the governing model from the permissive model to the punitive model would occur in response to the looming internal instability and public discontent toward rising corruption. Because the anti-corruption campaign is a costly move to facilitate such a transformation, the promotion advantage of more capable officials under the permissive model may turn out to be an Achilles heel for them under the punitive scheme. This is due to a positive association between officials' capability and the personal rent they obtained under the permissive scheme (as well as the effort exerted for economic growth). Personal connection may provide a shield for those high-profile officials, as the previous literature suggests that connection alleviates the concern about ideological congruence and loyalty (Jia, Kudamatsu and Seim, 2015; Jiang, 2018). Hypotheses 2a and 2b summarize these predictions.

Hypothesis 2a. *More capable city leaders are more likely to be investigated and prosecuted in the anti-corruption campaign.*

Hypothesis 2b. *Personal connection is negatively correlated with the probability of prosecution in the anti-corruption campaign and it mitigates the relationship between city leaders' capability and the risk of prosecution.*

Claim 4 in the model in the appendix further examines the ruler's preference for agents' personal capability under different governing models. The intuition is twofold. First, the ruler tends to favor the punitive scheme over the permissive scheme when the institutional loophole for corruption is big. This scenario is consistent with the CPC leadership's shift of the policy priority from economic growth to multifaceted realms, including state capability, ideological congruence, and sustainable and inclusive development.

This observation is in accordance with recent studies on the China's increased spending on environmental protection (Zhang, Chen and Guo, 2018) and poverty reduction (Zuo, Zhang and Zuo, 2019). Second, the model suggests that the selected officials under the punitive scheme are more likely to be the low type, who would exert more efforts on ideological congruence than on economic affairs. This prediction is supported by the empirical finding in the recent literature that the anti-corruption campaign may distract local officials' attention from economic affairs (Wang, 2020). Hypothesis 3 summarizes this implication.

Hypothesis 3. *City leaders who were appointed after the campaign exhibit a higher degree of allegiance to the party line.*

8 Data

We obtain the officially released reports of the anti-corruption investigations from the website of the Central Commission for Discipline Inspection (CCDI). Combining those reports with the Chinese Official Dataset (COD) from the China Center for Economic Research,[5] we construct a data set that covers 1,118 prefecture-level city mayors and party secretaries (henceforth, city leaders) who presided over major prefectures in 2013-2016.[6] During this period, 83 city leaders (7.42 percent) were investigated for corruption.[7] All the probed city leaders were prosecuted for corruption: 8 were charged in 2013, 35 in 2014, 21 in 2015, and 19 in 2016. The timing of the investigation cases may be correlated with the frequency of the CCDI's inspections conducted each year. We control the year of inspection in each province to deal with this problem.

[5]The data provide detailed personal and career information on mayors and party secretaries in prefecture-level cities for 1994-2016. A detailed description of these data is in Yao et al. (2020).

[6]We focus on city leaders, as opposed to province or higher-level leaders, to examine the hypotheses presented in the heuristic model. City leaders include mayors and party secretaries of prefectures, who constitute the major candidate pool for the selection of provincial leaders. The sanction and promotion of city leaders have far-reaching impacts on the ruling coalition of the next generation. Moreover, internal power structures at lower levels resemble those at the top. In turn, changing patterns in political selection and anti-corruption at the subnational level reflect the CPC's highest leadership.

[7]Only five provincial governors or party secretaries were investigated during the period. We do not study vice mayors, vice party secretaries, or departmental heads in the provincial government because it is difficult to measure their performance, which is a key variable in our hypotheses.

Capability. Our test requires a measure of capability in boosting economic growth. While GDP growth is a common measure, it may be incidentally driven by unobserved city and year effects. To deal with this problem, we focus on the long-term personal effects of city leaders on growth. Specifically, we take advantage of the rotation system in China to disentangle city leaders' capability and city or year specific effects. City leaders are frequently rotated between different jurisdictions throughout their tenure. Over time, the central and provincial leaders may form a steady belief about city leaders' capability by observing their long-term performance records. By a similar token, city leaders may also develop a reputation of corruption in their careers. Following an approach adopted by Yao and Zhang (2015), we estimate the officials' personal effects on GDP growth as their individual fixed effects.

$$\mathrm{y_{i(jt)} = X_{i(jt)} + \delta_i + \psi_j + \gamma_t + \varepsilon_{i(jt)}} \tag{1}$$

In Equation (1), $y_{i(jt)}$ is city j's growth rate in year t, when official i was a leader of city j. The vector $X_{i(jt)}$ is a set of time-varying control variables. δ_i is official i's fixed effect to be estimated. ψ_j represents city fixed effects and γ_t represents year fixed effects. $\varepsilon_{i(jt)}$ is an independently and identically distributed error term. δ_i is consistently estimated relative to a common mean when officials were laterally transferred as the officials (i) often serve in multiple jurisdictions (j). We use the point estimate of $\hat{\delta}_i$ based on the growth data in 1994-2016 as a measure of *Capability*.[8] For the charged officials who exited the sample before 2016, *Capability* is estimated based on their individual effects on growth between the first year they took a leadership position and the year they exited when they were investigated.

An alternative measure is an index of relative economic growth compared with peers throughout a city leader's tenure. This second measure controls specific time trends but may be biased by unobserved local conditions that shape a city's long-term growth

[8] Yao and Zhang (2015) provide a joint estimation of officials' personal effects on growth and political promotion, which takes into account the error terms of individual effects δ_i in the first stage.

potential. We computed a measure of capability based on a relative growth index. The results are qualitatively similar to those using *Capability* estimated from Equation (1). To save space, we relegated the results to Table A2 in the appendix.

Personal connection. The literature identifies personal connection to be an important factor in political selection and provides various options for measuring personal connection. A widely adopted strategy is to define two officials as connected if they have a common birthplace or hometown or an overlapping college experience (Fisman et al., 2018; Meyer, Shih and Lee, 2016). Another strand of the research identifies personal connection between officials and their superiors according to colleague experience (Jiang, 2018; Landry, Lü and Duan, 2018).

Our analysis focuses on officials' institutionalized connection. We define a city leader as connected to the *incumbent* provincial party secretary in the inspection year if the following two conditions are met: (1) the incumbent provincial party secretary was the city leader's superior when both worked in a province- or city-level government[9] and (2) the official's rank at the time was no more than two levels below the provincial party secretary.

In addition to the binary measure of personal connection, we indicate the strength of connection by counting the years of colleague experience. We expect the strength of connection to increase along with the co-work experience. We also control for city leaders' personal characteristics, including dummy variables that indicate college education, minority, and the gender type. Table A1 in the appendix summarizes the variables used in the econometric analysis.

9 Evolving Patterns of Promotion (H1a and H1b)

We define promotion as an event in which an official i was appointed to a new, higher-ranking position in year t. A city leader is considered promoted if the leader is appointed

[9]Our data start from 1994. By that time, many current provincial party secretaries already held positions at the city level. Therefore, we are unable to include colleagueship at the county level. Hence, the estimate on colleagueship-based connections can be considered a lower bound.

to be a mayor or a party secretary of the sub-provincial city, or to a position of the sub-provincial rank in the provincial government or party committee. In the proposed model, where the type of agent is discernible by the ruler, the choices of anti-corruption measures and the types of agents are determined by the ruler's value for economic growth (π) and the severity of the institutional loophole (θ). When appointments for different positions are shaped by varying environments of π and θ, the equilibrium is featured with a mixture mass of low- and high- capability agents, and corruption is only partially deterred for the low types. Consequently, capability should be a strong predictor for promotion before the start of the anti-corruption campaign, but not so afterward.

We estimate a probit model for the probability of promotion, respectively before and after 2013, the year when the anti-corruption campaign started. In Equation (2), $Promotion_{ijt}$ is the probability of the promotion of official i presiding over city j in year t. $Capability_i$ and $Connection_i$ are defined as before. X_j is a set of personal variables, including the official's current age and the square term of age, college dummy, minority dummy, and female dummy. u_j stands for city fixed effects, and T stands for year fixed effects.

$$\mathrm{Pr(Promotion_{ijt})} = \Phi[\alpha + \beta \cdot \mathrm{Capability_i} + \gamma \cdot \mathrm{Connection_i} + \mathrm{X_j b} + \mathrm{u_j} + \mathrm{T}]. \qquad (2)$$

Consistent with Hypothesis 1a, the estimates presented in Table 1 show that $Capability_i$ has a positive and statistically significant marginal effect associated with promotion in 1994-2012 and a negative, albeit insignificant, marginal effects afterwards. The estimates of $Connection_i$ are positive in both periods. Consistent with Hypothesis 1b, the marginal effect associated with personal connection is larger during the anti-corruption campaign in 2013-2016. According to our preferred specification which includes all control variables, the marginal effect of personal connection on the probability of promotion is more than twice that in 1994-2012. The results suggest a trade-off between boosting

Table 1: Changing pattern of promotion (Testing H1a and H1b)

Dependent variable: Promotion				
	1994-2012		2013-2016	
	(1)	(2)	(3)	(4)
Capability	1.29**	1.50**	-2.52	-2.20
	(0.62)	(0.70)	(2.33)	(2.26)
	[0.32]**	[0.37]**	[-0.41]	[-0.34]
Connection (binary)	0.15***	0.07*	0.26***	0.30***
	(0.03)	(0.03)	(0.09)	(0.09)
	[0.04] ***	[0.02]**	[0.04]***	[0.05]***
Other controls	NO	YES	NO	YES
Region Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Observations	10,289	10,066	2,346	2,343
R-squared	0.04	0.15	0.03	0.11

Notes: This table presents the estimates for the probability of promotion for prefecture-level city mayors and party secretaries in 1994-2016. *Capability* is the point estimates for δ_i in Equation (3) using the largest connected 1994-2016 sample. The following variables are controlled but not reported: whether the official has a college degree, whether the official is from an ethnic minority group, whether the official is female, age, and the squared term of age. The results were obtained by a heteroscedasticity-robust probit model. The robust standard errors of the estimated coefficients are reported in parentheses. The marginal effects evaluated at the sample means are reported in brackets. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

economic performance and maintaining the party line under the punitive model.

10 Capability, Personal Connection and Anti-corruption Investigation (H2a and H2b)

We test Hypotheses 2a and 2b using the following probit model. In Equation (3), $investigation_{ij}$ is a dummy that indicates whether official i in city j was investigated.[10] $\Phi[\cdot]$ is the cumulative distribution function of the standard normal distribution. $Capability_i$ is the point estimate for δ_i, the personal effects estimated from Equation (1). $Connection_i$ is the binary variable or continuous measure of the strength of connection. The interactive term between $Capability_i$ and $Connection_i$ addresses the possibility that the effect

[10]The sample of officials for analysis includes officials who had been mayors or party secretaries of prefecture cities in 2013-2016. Most of the officials served as city leaders or held deputy positions before 2013. Capability is estimated based on the 1994-2016 sample of cities. Thus, the capability measure largely indicates officials' performance before the anti-corruption campaign.

of $Capability_i$ on investigation is contingent on an official's personal connection.[11] X_i is the set of personal variables. ϕ_i is a set of dummy variables indicating whether official i served as a city leader (mayor or party secretary) each year between 2013 and 2016.[12] u_j is a set of dummy variables indicating the region of an official's last post. T_j is a set of dummy variables indicating the year when the city was inspected by the CCDI's inspection team.

$$\begin{aligned}\Pr(\text{investigation}_{ij}) = \Phi[a + b \cdot \text{Capability}_i + c \cdot \text{Connection}_i \\ + d \cdot \text{Capability}_i \cdot \text{Connection}_i + X_i b + \phi_i + u_j + T_j]. \quad (3)\end{aligned}$$

Table 2 reports the estimates for Equation (3). Hypothesis 2a is supported by the estimates for Capability through columns 1 to 4 of Table 2. A 0.01 increase in the value of $Capability_i$ translates into an increase of 2.5 percentage points in the probability of investigation when the official is not connected to the provincial party secretary. Overall, a one-standard-deviation increase in $Capability_i$ explains 18.6 percent of one standard deviation in the probability of investigation. Hypothesis 2b is supported by the estimates for *Connection* and its interactive term with *Capability*. The estimates results show that city leaders who were politically connected with incumbent provincial party secretaries were 3-5 percentage points less likely to be investigated for officials with average capability. Meanwhile, the interactive term $Capability_i \cdot Connection_i$ demonstrates a strong and significant negative impact on the probability of investigation for corruption.

Following Table 2, Figure 1 plots the marginal effects of *Capability* on the probability of investigation, conditional on the strength of personal connection. As the figure shows, *Capability* increases the probability of investigation only for officials with no or weak

[11] We use the method proposed by Ai and Norton (2003) to compute the marginal effect of the interactive term. The corresponding Stata command is *inteff*.

[12] Some officials were moved to other posts during 2013-2016. Often, officials were investigated after they were moved from their posts before inspection. Controlling the year of incumbency alleviates selection bias due to nonrandom exit.

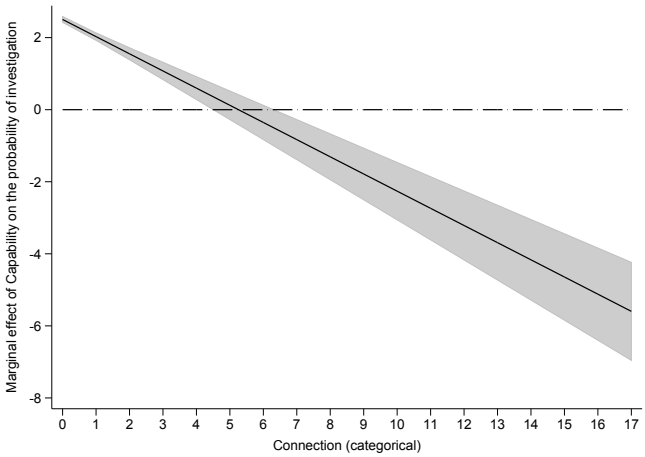
Table 2: Capability, Personal Connection, and Investigation (Testing H2a and H2b)

Dependent variable: Being investigated in 2013-2016				
	(1)	(2)	(3)	(4)
Capability	13.26***	17.25***	13.99***	17.76***
	(2.59)	(0.93)	(2.43)	(0.92)
	[2.30]***	[2.75]***	[2.50]***	[2.88]***
Connection (binary)	-0.38**	-0.29**		
	(0.16)	(0.13)		
	[-0.05]**	[-0.03]**		
Capability × *Connection (binary)*	-9.51**	-10.14**		
	(4.80)	(4.33)		
	[-1.18]**	[-1.39]**		
Strength of Connection			-0.07**	-0.07
			(0.04)	(0.05)
			[-0.01]*	[-0.01]*
Capability × *Strength of Connection*			-7.97***	-7.44***
			(1.36)	(1.33)
			[-0.48]*	[-0.41]*
Other controls	NO	YES	NO	YES
Region Fixed Effects	NO	YES	NO	YES
Incumbency-year dummies	NO	YES	NO	YES
Observations	998	998	998	998
Pseudo R-squared	0.02	0.16	0.02	0.16

Notes: This table presents the estimates for the probability of being investigated in 2013-2016. The sample consists of 998 prefecture-level mayors or party secretaries who were in office in 2013-2016. *Capability* is the point estimate for δ_i in Equation (3) using the largest connected 1994-2016 sample. The following variables are controlled but not reported: whether the official has a college degree, whether the official is from an ethnic minority group, and whether the official is female, as well as the dummy variables indicating whether the official's city was audited in a specific year. Incumbency-year dummies are a set of dummies indicating whether the official was in office in a specific year in 2013-2016. The results were obtained by a heteroscedasticity-robust probit model. The robust standard errors of the estimated coefficients are reported in parentheses. The marginal effects are reported in brackets. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

connections. City leaders who had been with their political superiors for 6 years or more are not more likely to be probed for corruption when endowed with higher capability. We interpret this as an evidence in support of the premise that the anti-corruption campaign is motivated to induce a major transformation in the governance models, as stated by Hypotheses 2a and 2b.

Figure 1: The marginal effects of capability on the probability of investigation



Notes: The plot is obtained based on the estimation in column (3) of Table 2. The marginal effects are evaluated by setting capability at the sample mean, zero. The marginal effects are presented with bootstrapping confidence intervals at the 95 percent level, from 200 repetitions.

11 Policy Focus (H3)

To test whether the anti-corruption campaign possibly induces shifting attentions in the policy focus of local leaders, as suggested by Hypothesis 3, we analyze the annual work reports by city governments to construct measures of officials' policy preference.[13] In China, local governments deliver an annual work report that covers comprehensive policy domains to the local People's Congress, the de jure legislative branch. The reports are drafted by mayors' offices and need to be read and approved by the mayors and party secretaries before the annual meeting of the local People's Congress. Although

[13]The work reports are downloaded from `http://data.people.com.cn/`.

the reports cover a wide range of policy issues, they differ considerably in the lengths devoted to different topics. We assume that the difference in the lengths of topics reflects city leaders' policy and political preference.

The textual analysis consists of two steps. In the first step, we divide the work reports by paragraph and treat each paragraph as a unit of analysis. We randomly draw 160,000 units to conduct unsupervised machine learning through the latent Dirichlet allocation (LDA) algorithm to identify potential topics from the training units. In the second step, we treat each work report as a unit of analysis and use the LDA algorithm to compute the probability distribution of topics in each report.[14] By examining the keywords used for identifying each topic, we are able to define a topic as pertaining to a specific policy agenda, such as economic growth or party discipline. We then assign a value of policy weight by summing up the estimated probabilities of a cluster of topics in each report.

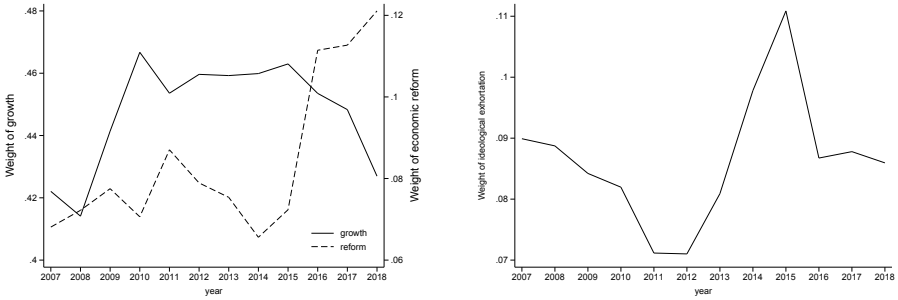
We develop three measures of policy inclination using the estimates obtained from the LDA models. *Economic growth* includes a cluster of topics with policy keywords, such as GDP, revenue, investment, and real estate. *Economic reform* combines the topics containing the keywords, such as sustainable development, business environment, and market liberalization. *Party discipline* captures the weight of discourses indicating the significance of political loyalty and congruence to the party line.[15] It is evident from Figure 2 that the prevalence of economic growth declined, and the trend of economic reform picked up during the recent years. At the same time, the share of topics related to party discipline and loyalty followed a rising trend, particularly after 2013. The patterns arguably corroborate the changing policy preferences of local officials induced by the anti-corruption campaign.

Table 3 reports a further piece of evidence based on regressions of policy preferences, measured by the weights of different topics in the annual work reports. The main variable of interest is a dummy that indicates whether the incumbent mayor was promoted after

[14]The computation for topic modeling is implemented by using Gensim in the Python library: `https://radimrehurek.com/gensim/`.

[15]Figures A1-A3 in the appendix present the word clouds for the related topics.

Figure 2: Trends of topics related to economic growth, reform, and party discipline in government reports



Notes: The left panel presents the average trends of weights on topics related to economic performance. The right panel presents the average trends of topics on loyalty and party discipline.

Table 3: Testing H3: Changing policy preferences

Dependent variable: Weight of Topic				
Weight for	Growth	Reform	Growth + Reform	Party Line
	(1)	(2)	(3)	(4)
Promoted in the campaign	2.03***	0.33	2.36***	0.61**
	(0.42)	(0.26)	(0.48)	(0.25)
Other controls	YES	YES	YES	YES
City Fixed Effects	YES	YES	YES	YES
Observations	2,520	2,520	2,520	2,520
R-squared	0.09	0.16	0.05	0.18

Notes: The results are obtained using linear panel regression. The following control variables are included but not reported: the growth rate of GDP, the age of the mayor, education of the mayor, whether the mayor is female, and whether the mayor is from an ethnic minority group. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

2013. The theoretical argument is partially supported, as indicated by a clear pattern that new appointees during the campaign devoted more space to topics related to the party line (column (4)). Interestingly, being promoted in the campaign also positively relates to the growth topics. This may be attributed to the fact that the political discourse in the annual work reports is a coarse measure of officials' real allocation of effort. Succeeding leaders may just act like highly capable types through cheap talk about economic policies without exerting real effort in boosting investments.

12 Pure Power Struggle?

Although the empirical evidence is consistent with the argument that there was a fundamental change in the governing model of the CPC, there is a legitimate concern that the campaign may have only targeted officials from the rival fractions. To address this concern, we conduct a robustness test by excluding city leaders who were connected to purged provincial leaders. If the campaign was only meant to weaken potential rivals for the central leadership, the pattern of investigations obtained from the baseline estimations should not extend to other provinces.

We drop the city leaders who were connected to purged provincial leaders and re-estimate the baseline models.[16] The qualitatively similar results reported by Table A3 in the appendix lend support to the argument that the anti-corruption campaign signified a turning point to a new governance model.

13 Conclusion

The research on comparative authoritarianism has devoted relatively limited efforts to studying its adaptation to social and economic transformations. Through a case study on the anti-corruption campaign in China, this paper illustrates that authoritarian rulers may take unusual moves of reshuffling the ruling coalition to cope with fundamental

[16] Altogether, 5 of 91 provincial leaders were investigated in 2013-2017. The purged provincial leaders were Zhou Benshun (Hebei), Su Shulin (Fujian), Wei Hong (Sichuan), Wang Min (Liaoning), and Huang Xingguo (Tianjin).

challenges to political stability. Consistent with this logic, the empirical analysis reports a diminishing impact of economic capability on promotion following the campaign, as well as a positive association between officials' capability and the probability of investigation for corruption. Applying topic modeling to the annual work reports of city governments suggests that officials who were promoted during the campaign had a higher degree of congruence with the party line.

The radicalism of the anti-corruption campaign exposes the regime's commitment problem to honor the rent-sharing promises. By weakening the incentives for growth, the campaign undermined an important aspect of the merit-based personnel system. In turn, the void of pecuniary incentives must be replaced by ideological exhortation. The open question is whether such strategy is enough to maintain the internal cohesiveness of the ruling regime. The absence of institutionalized mechanisms to process conflicts renders a difficulty for the "re-equilibrium" process.

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Appendix (Not for Publication)

A1 Heuristic Model

Consider a game with a ruler (R) and an agent (i). The agent is endowed with one unit of time, which is allocated between two tasks: the management of economic growth (growth), E_g, and ideological exhortation (ideology), E_l. The outputs of growth and ideology are $Y = E_g$ and $L = E_l$. Intuitively, we can interpret Y as a measure of capability and L as a measure of loyalty. Exerting effort on growth incurs a cost $C_i(E_g) = E_g^2/\alpha_i$. The effort spent on ideological exhortation is costless. A highly capable agent bears a lower cost of effort; thus, she exerts more effort on growth.

The agent may commit corruption. In the case of corruption, the agent reaps a rent worth fixed share θY, where θ is a fixed share of the growth outcome. θ can be understood as a parameter of the institutional loophole in the governance institution. We assume that in the case the agent commits corruption, she will receive an additional payoff θY, which is equal to the amount of rent she steals. The ruler obtains utilities from Y and L, which are verifiable and contractible. Let π and $1-\pi$, respectively, be the weight the ruler assigns to growth and ideology, with $\pi > 1/2$. The ruler designs the reward to the agent in proportion to the following term.

$$\text{Reward}_\text{i} = \phi\pi\text{Y} + (1-\pi)\text{L}.$$

$\phi \in (0,1)$ is the parameter measuring the prevalence of economic performance in the incentive scheme for the agent. A larger ϕ implies that the promotion mechanisms are more merit based. The power of performance-based incentive is also in proportion to the ruler's relative weight for economic performance π. In addition, the ruler can implement an anti-corruption mechanism such that the corrupted agent will be expected to pay a cost Q. We can understand Q as the severity of the anti-corruption campaign. Let I be a binary variable that indicates whether the agent commits corruption. The agent's utility

optimization problem can be expressed as follows.

$$\begin{aligned} \max_{E_g,E_l,I} \quad & U_a = \phi\pi Y(E_g) + (1-\pi)L(E_L) + I\cdot\theta E_g - E_g^2/\alpha_i - I\cdot Q. \\ \text{s.t.} \quad & E_g + E_l = 1 \quad E_g, E_l > 0, \quad I \in \{0,1\}. \end{aligned} \tag{A1}$$

The ruler's utility is the sum of economic performance Y and political loyalty L, weighted by parameter π. The ruler also bears a cost θY in the case the agent commits corruption. We can understand this cost as the loss of economic rent or the increase in public discontent against it. In addition, the performance-based system involves an administrative cost equal to $(\phi^2)/2$. This term may stem from the cost of precisely measuring the real performance. Higher prevalence of economic performance in the incentive scheme implies higher administrative cost. In turn, we can formulate the ruler's optimization problem as follows.

$$\begin{aligned} \max_{\phi,Q} \quad & U_R = \pi Y + (1-\pi)L - (\phi^2/2) - I\cdot\theta Y \\ \text{s.t.} \quad & \{E_g^*, E_l^*, I^*\} \in \arg\max U_a. \end{aligned} \tag{A2}$$

In Equation A2, E_g^*, E_l^*, and I^* refer to the solution of the agent's optimization problem as expressed by A1. Notice that in the formulation of the ruler's problem, the anti-corruption campaign does not incur a direct cost but affects the ruler's utility indirectly through its impacts on the agent's effort allocation and the choice about corruption. It then suffices to consider only two extreme scenarios. First, if the ruler sets Q prohibitively high (which is costless for the ruler), the agent will refrain from corruption for sure. We define this circumstance as the "punitive scheme" ($I = 0$). Second, if the ruler sets Q low, corruption will not be deterred. Again, since Q does not incur any cost for the ruler, we can assume that the ruler always chooses $Q = 0$ in this scenario if she decides that the sanction is not to deter corruption. We define such a scenario as the "permissive scheme" ($I = 1$).

Assuming that internal solutions are feasible for solving Equation A1, the optimization of the agent obtains the following condition.

$$E_g^* = \begin{cases} (\alpha_i/2)[(1+\phi)\pi - 1] & if\ \mathrm{I} = 0 \\ \\ (\alpha_i/2)[(1+\phi)\pi - 1 + \theta] & if\ \mathrm{I} = 1 \end{cases} \tag{A3}$$

Claim 1. *In both the permissive and punitive schemes, the agent with higher capability allocates more effort on growth and less effort on loyalty. Fixing α_i, the agent allocates more effort on growth and less effort on loyalty under the permissive scheme than under the punitive scheme. Moreover, the agent exerts more effort on growth when performance has a higher prevalence in the promotion scheme (larger ϕ) and the ruler's weight of economic growth is larger (larger π).*

Proof. Inspecting Equation A3 shows that $\frac{\partial E_g^*}{\partial \alpha_i} > 0$, $\frac{\partial E_g^*}{\partial \phi} > 0$, $\frac{\partial E_g^*}{\partial \pi} > 0$, and $E_g^*(I=1) > E_g^*(I=0)$. □

Claim 1 indicates the trilemma among performance, loyalty, and constraining corruption in an authoritarian principal-agent relationship. The results afford a competence versus loyalty trade-off in which an increasing effort on economic performance inevitably undermines loyalty. Interestingly, the opportunity of personal enrichment amplifies the agent's incentive to exert growth-enhancing efforts, and that in turn decreases loyalty further. Since the permissive scheme grants immunity from being punished for corruption, it then leads to a higher level of effort on economic performance as well as corruption. Solving the ruler's optimization problem, we can get the ruler's optimal choice on the parameter for performance evaluation ϕ^*.

$$\phi^* = \begin{cases} (\alpha_i/2)(2\pi - 1)\pi & if\ \mathrm{I} = 0 \\ \\ (\alpha_i/2)(2\pi - 1 - \theta)\pi & if\ \mathrm{I} = 1 \end{cases} \tag{A4}$$

Claim 2. *Given the capability of the agent, the optimal parameter for performance evaluation ϕ^* is larger when the ruler assigns a larger weight to economic growth (π). Under the permissive scheme, the optimal prevalence of performance evaluation is smaller when*

the institutional loophole for corruption is larger (θ).

Claim 2 establishes the relationship between the importance of economic performance in promotions and the underlying political environment with regard to growth and corruption. The positive association between the ruler's preference for economic performance and meritocratic promotion is intuitive. Meanwhile, promoting higher capability agents becomes increasingly undesirable when the institutional loophole is looming large. This result stems from the complementarity between α_i and θ in determining the personal rent from corruption. This comparative static may explain the diminishing role of the officials' personal effects on growth in their opportunities for promotion under Xi's term, when the central leadership was increasingly preoccupied with institutional decay in the bureaucratic system of the CPC.

Claim 3. *Given the capability of the agent, there is a threshold value $\hat{\theta}$, such that the ruler prefers the punitive scheme to the permissive scheme if $\theta > \hat{\theta}$.*

Proof. Note that the optimal $E_g^*(I=0)$ is equal to $E_g^*(I=1)$ in the case that $\theta = 0$. It suffices to study the condition under which $\frac{\mathrm{d}U_R^*}{\mathrm{d}\theta} > 0$ under the permissive scheme. It follows that $U_R^* = (2\pi - 1 - \theta)E_g^* - (\phi^2/2) + (1-\pi)$. Taking the derivative of U_R^* with regard to θ we can get that: $\frac{\mathrm{d}U_R^*}{\mathrm{d}\theta} = -E_g^* + (2\pi - 1 - \theta)\frac{\partial E_g^*}{\partial \theta} - \phi^* \frac{\partial \phi^*}{\partial \theta}$. Using $E_g^* = (\alpha_i/2)[(1+\phi)\pi - 1 + \theta]$ and $\phi^* = (\alpha_i/2)(2\pi - 1 - \theta)\pi$, we can further get: $\frac{\mathrm{d}U_R^*}{\mathrm{d}\theta} = (\alpha_i/2)[(1-\phi^*)\pi - 2\theta]$. So $\frac{\mathrm{d}U_R^*}{\mathrm{d}\theta} > 0 \iff (1-\phi^*)\pi > 2\theta \iff \pi - (\alpha_i/2)(2\pi - 1 - \theta)\pi^2 > 2\theta$. Simplifying, we can get: $\theta < \frac{2\pi - \alpha_i(2\pi-1)\pi^2}{4-\alpha_i\pi^2} = \hat{\theta}$. □

Claim 3 establishes the threshold condition of θ for the ruler's preference between the punitive scheme and the permissive scheme. It is intuitive that the ruler will prefer the permissive scheme only if θ is not too large. Suppose otherwise, θ grows over time, this may one day push the ruler to switch from condoning corruption to the punitive scheme.

Claim 4. *There is a threshold value $\overline{\theta}$, such that the ruler's utility weakly increases in the agent's capability α_i if $\theta > \overline{\theta}$. Under the punitive scheme, the ruler's utility decreases in the agent's capability.*

Proof. Under the permissive scheme, the ruler's utility is $U_R^* = (2\pi - 1 - \theta)E_g^* - ((\phi^*)^2/2) + (1-\pi)$. It follows that $\frac{\mathrm{d}U_R^*}{\mathrm{d}\alpha_i} = (2\pi - 1 - \theta)\frac{\mathrm{d}E_g^*}{\mathrm{d}\alpha_i} - 2\phi^* \frac{\mathrm{d}\phi}{\mathrm{d}\alpha_i}$. Using $E_g^* = (\alpha_i/2)[(1+\phi)\pi - 1 + \theta]$ and $\phi^* = (\alpha_i/2)(2\pi - 1 - \theta)\pi$, we can further get: $\frac{\mathrm{d}E_g^*}{\mathrm{d}\alpha_i} = \frac{(1+2\phi^*)\pi - 1 + \theta}{2}$, so $\frac{\mathrm{d}U_R^*}{\mathrm{d}\alpha_i} = \frac{\phi^*[(2\pi-2)\phi^* + (\pi - 1 + \theta)]}{\alpha_i}$. This term is positive if $(2\pi - 2)\phi^* + (\pi - 1 + \theta) > 0$, or $[1 - \pi(\pi-1)\alpha_i]\theta > (1-\pi)[1 + \pi(2\pi - 1)\alpha_i]$. It follows that under the permissive scheme $\frac{\mathrm{d}U_R^*}{\mathrm{d}\alpha_i} > 0$ only if $\theta > \frac{(1-\pi)[1+\pi(2\pi-1)\alpha_i]}{[1-\pi(\pi-1)\alpha_i]} = \overline{\theta}$. By a similar procedure, we can get that under the punitive scheme $\frac{\mathrm{d}U_R^*}{\mathrm{d}\alpha_i} > 0$ is equivalent to $(\pi - 1)[\alpha_i(2\pi - 1)\pi + 1] > 0$, which never holds for $\pi \in (1/2, 1)$. □

Finally, Claim 4 sheds light on the ruler's value for personal competence in managing the economy. The result confirms the intuition that the ruler values competence positively under the permissive scheme provided that the institutional loophole is not too large. This result is again consistent with the principle of merit-based bureaucratic selection. A second implication of Claim 4 is that under the punitive scheme, the ruler prefers lower capability agents, who will exert relatively less energy on economic performance and more effort on loyalty.

Linking the comparative statics to the context of political selection and the anti-corruption investigations in China, Hypotheses 1a and 1b can be inferred from Claims 2 and 4, which suggest that personal effects on economic performance had a larger impact on political promotions and appointment when the Party's central leadership was more tolerant of corruption. Hypothesis 2a and 2b are consistent with the intuition of Claims 1 and 3, which associates higher capability agents with a higher level of corruption. Thus, these officials are investigated and charged with a higher probability when the regime switches to the punitive model. Hypothesis 3 can be indirectly inferred from Claims 3 and 4, which suggest that the ruler may not prefer highly competent agents when the institutional decay of corruption imposes a sufficiently severe political threat to the regime and that loyalty precedes competence under this new governance model.

Relative Growth

We use an alternative indicator of officials' capability based on the relative growth rates in their tenures. Because we only have economic data for cities and provinces, we cannot take into consideration an official's performance when she served as a leader in the county or smaller jurisdiction. For a prefectural official in our sample, we take the average of her performance as a city leader (mayor or party secretary). Let $c = 1, 2, ...$ is the cities that she had served. Let T_c be the number of years that the official served in city c. $p = 1, 2, ...P$ is the index of provinces where the cities are located, and g_{ct} and g_{pt} are the respective annual growth rates of city c and province p in year t. We first get the relative annual growth rate of a city within its province g_{ct}/g_{pt}. Next, we calculate its average in an official's tenure in that city. It is the official's career average performance if the official only served in that city during the official's career as a city leader. If the official served in multiple cities, we obtain her career average by averaging her average relative performances in those cities. To be exact, a prefectural official's career average of the relative growth rate is defined by:

$$RGR_C = \frac{1}{C}\sum_{c=1}^{C}(\frac{1}{T_c}\sum_{t=1}^{T_c}\frac{g_{ct}}{g_{pt}}) \tag{A5}$$

There are several reasons why relative performance is preferred to absolute performance. First, different provinces have different initial conditions for growth. By rescaling individual cities' growth rates by their provincial average, the relative growth rates g_{ct} and g_{pt} make officials from different provinces comparable. Second, most of the prefectural officials' promotions happen in their own provinces. Therefore, their competition is mostly within their own province. To the extent that economic performance matters for promotion, the relative growth rates g_{ct} and g_{pt} capture this feature of competition. Third, the relative growth rates g_{ct} and g_{pt} control the common time trend of growth in a province, so comparison across time is possible. Lastly, the relative growth rates g_{ct} and g_{pt} are measures free of the unit of analysis, so we can adopt them to obtain the career

averages for provincial officials, which is our next task.

In our sample, 58% of the provincial officials served as mayor or municipal party secretary. Consider a provincial official who had served in C cities and P provinces. To continue using the notation introduced above, let T_p be the number of years the official served in province p. In addition, let g_t be the national average growth rate in year t. Then the official's career average of the relative growth rate is defined by:

$$RGR_P = \frac{1}{C+P}[\sum_{c=1}^{C}(\frac{1}{T_c}(\sum_{t=1}^{T_c}\frac{g_{ct}}{g_{pt}}) + \sum_{p=1}^{P}(\frac{1}{T_p}(\sum_{t=1}^{T_p}\frac{g_{pt}}{g_t})] \tag{A6}$$

That is, the official's career average is taken over all her tenures as municipal and provincial leader. Of course, if an official did not serve as a leader in any city, C equals zero and the first term in the brackets vanishes. A potential challenge to RGR_P warrants more discussion.

The measure treats municipal and provincial performances as equally important for an official's career performance. A province is a much larger jurisdiction unit than a city, and managing a province probably requires a different set of abilities than managing a city. In addition, because most economic activities are carried out by the city, there is a question whether it is proper to measure a provincial official's performance by her province's economic growth rates. We acknowledge the merits of those challenges, but contend that probably RGR_P is the best measure so far we can find. More than that, the two components we have used to construct RGR_P, g_{ct}/g_{pt} and g_{pt}/g_t, are relative measures and should have minimized the problem of incomparability. Taking out the provincial average and the national average respectively, g_{ct}/g_{pt} and g_{pt}/g_t are measures of an official's ability relative to her respective peers, i.e., fellow mayors and prefecture party secretaries, or fellow provincial governors and party secretaries. To the extent that we only care about officials' relative performances, it can be justified to treat municipal experience and provincial experience equally.

A2 Appendix Tables

Table A1: Summary statistics

Variable	N	Mean	Standard deviation	Min	Max
Individual-level variables					
Being investigated	998	0.069	0.25	0	1
Capability	998	0.00	0.02	-0.10	0.11
Binary connections	998	0.20	0.40	0	1
Categorical connections	998	0.65	1.81	0	17
College	998	0.70	0.46	0	1
Minority	998	0.14	0.34	0	1
Female	998	0.06	0.23	0	1
Inspection_2014	998	0.58	0.49	0	1
Inspection_2016	998	0.33	0.47	0	1
City-year-level variables					
Promotion	12,635	0.16	0.37	0	1
Capability	12,635	0.00	0.03	-0.54	0.35
Binary connection	12,635	0.26	0.44	0	1
Strength of connection	12,635	0.90	2.08	0	17

Notes: Capability is normalized to have zero mean.

Table A2: Relative growth, Personal Connection, and investigation (Testing H2a and H2b)

Dependent variable: Being investigated in 2013-2016				
	(1)	(2)	(3)	(4)
Relative growth	5.92**	6.53***	5.63**	6.60***
	(2.46)	(2.13)	(2.45)	(2.54)
	[0.81**]	[0.89***]	[0.77**]	[0.90***]
Connection (binary)	-0.37*	6.80		
	(0.22)	(13.39)		
	[-0.05*]	[0.93]		
Relative growth × Connection (binary)		-7.15		
		(13.37)		
		[-1.10]		
Strength of Connection			-0.05	3.31***
			(0.07)	(1.24)
			[-0.01]	[0.45***]
Relative growth × Strength of Connection				-3.36***
				(1.29)
				[-0.53]
Other controls	NO	YES	NO	YES
Region Fixed Effects	NO	YES	NO	YES
Incumbency-year dummies	NO	YES	NO	YES
Observations	940	940	940	940
Pseudo R-squared	0.12	0.12	0.11	0.12

Notes: This table presents the estimates for the probability of being investigated in 2013-2016. The sample consists of 940 prefecture-level mayors or party secretaries who were in office in 2013-2016. Relative growth is computed from Equations A3 and A4. The following variables are controlled but not reported: whether the official has a college degree, whether the official is from an ethnic minority group, and whether the official is female, as well as the dummy variables indicating whether the official's city was audited in a specific year. Incumbency-year dummies are a set of dummies indicating whether the official was in office in a specific year in 2013-2016. The results were obtained from a heteroscedasticity-robust probit model. The robust standard errors of the estimated coefficients are reported in parentheses. The marginal effects are reported in brackets. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table A3: Capability, Personal Connection, and Investigation (Excluding those connecting to purged superiors)

Dependent variable: Investigation			
	(1)	(2)	(3)
Capability	15.13***	15.19***	16.39***
	(2.59)	(1.42)	(1.94)
	[1.81***]	[1.78***]	[1.81***]
Connection (binary)		-0.18	
		(0.15)	
		[-0.02]	
Capability × Connection (binary)		-9.70*	
		(5.16)	
		[-0.92*]	
Strength of Connection			-0.05
			(0.05)
			[-0.01]
Capability × Strength of Connection			-6.99***
			(1.70)
			[-0.22]
Other controls	YES	YES	YES
Region Fixed Effects	YES	YES	YES
Incumbency-year dummies	YES	YES	YES
Observations	976	976	976
R-squared	0.17	0.17	0.18

Notes: This table presents the estimates for the probability of being investigated in 2013-2016. The sample consists of 976 prefecture-level mayors or party secretaries who were in office in 2013-2016, excluding those connected to the provincial party secretaries who were prosecuted for corruption in this period. *Capability* is the point estimates for δ_i in Equation (3) using the largest connected 1994-2016 sample. The following variables are controlled but not reported: whether the official has a college degree, whether the official is from an ethnic minority group, whether the official is female, the dummies indicating whether the official's city was exposed to an auditing in a specific year. The results were obtained from a heteroscedasticity-robust probit model. The robust standard errors of the estimated coefficients are reported in parentheses. The marginal effects are reported in brackets. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Figure A1: Topics related to economic growth

Figure A2: Topics related to economic reform

Figure A3: Topics related to party discipline